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U. S. Department of Agriculture
Bureau of Agricultural Economics

Handbook of Official Grain Standards

For Oats, Feed Oats, Mixed Feed Oats, and Grain Sorghums

Tabulated and Abridged Description of the Official Grain Standards of the United States as established and promulgated by the Secretary of Agriculture:

For Oats, as revised - Effective September 1, 1925
For Feed Oats - - - Effective September 1, 1925
For Mixed Feed Oats, Effective September 1, 1925
For Grain Sorghums - Effective December 1, 1924

(Insert for Handbook U. S. G. S. A. Form No. 90, which contains a tabulated and abridged description of the official grain standards of the United States for wheat, shelled corn, and rye.)

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OATS STANDARDS

For the purpose of official grain standards of the United States for oats:

Oats.—Oats shall be any grain which consists of 80 per cent or more of cultivated oats and not more than 10 per cent of foreign material.

Color classification.—All oats shall be designated as white, red, gray, black, or mixed, according to the color of the oats, as the case may be. For the purposes of this classification white oats includes yellow oats. Oats shall be white, red, gray, or black, respectively, when they consist of oats of such color and not more than 10 per cent of other colors of cultivated and wild oats, either singly or in any combination. Mixed oats shall be all other oats.

Grades.—All oats shall be graded and designated as No. 1, No. 2, No. 3, No. 4, or Sample Grade, white, red, gray, black, or mixed, as the case may be, according to the respective requirements thereof as specified in these standards, except that in the case of mixed oats the requirements as to the maximum percentages of other colors shall be disregarded.

Grade requirements for white, red, gray, black, and mixed oats

Grade	Condition and general appearance [1]	Minimum test weight per bushel	Sound cultivated oats not less than—	Heat damaged (oats or other grains)	Foreign material	Wild oats	Other colors, cultivated and wild oats
				Not to exceed—			
1 [2]	Shall be cool and sweet, and of good color	*Lbs.* 32	*P. ct.* 98	*P. ct.* 0.1	*P. ct.* 2	*P. ct.* 2	*P. ct.* [3] 2
2	Shall be cool and sweet, and may be slightly stained	29	95	.3	2	3	[4] 5
3	Shall be cool and sweet, and may be stained or slightly weathered	26	90	1.0	3	5	10
4	Shall be cool, and may be musty, weathered, or badly stained	23	80	6.0	5	10	10
Sample grade.	Shall be white, red, gray, black, or mixed oats, respectively, which do not come within the requirements of any of the grades from No. 1 to No. 4, inclusive, or which have any commercially objectionable foreign odor, or are heating, hot, sour, or are otherwise of distinctly low quality.						

[1] The percentage of moisture in grades Nos. 1, 2, and 3 shall not exceed 14½, and in grade No. 4 shall not exceed 16.

[2] In the case of white oats, No. 1 shall be cool and sweet and of good white or creamy white color.

[3] Four per cent of other colors allowed in No. 1 red, gray, or black oats. This column does not apply to mixed oats.

[4] Ten per cent of other colors allowed in No. 2 red, gray, or black oats.

GRADES FOR BLEACHED, AND WEEVILY OATS

BLEACHED OATS

Bleached oats.—Bleached oats shall be oats which, in whole or in part, have been treated by the use of sulphurous acid or other bleaching chemicals.

Grades for bleached oats.—Bleached oats shall be graded and designated according to the grade requirements of the standards applicable to such oats if they were not bleached, and there shall be added to, and made a part of, such grade designation the word "Bleached."

WEEVILY OATS

Weevily oats.—Weevily oats shall be all oats which are infested with live weevils or other insects injurious to stored grain.

Grades for weevily oats.—Weevily oats shall be graded and designated according to the grade requirements of the standards applicable to such oats if they were not weevily, and there shall be added to, and made a part of, the grade designation the word "Weevily."

DEFINITIONS

Basis of determinations.—All determinations shall be upon the basis of the lot of grain as a whole, including foreign material, other grains, and wild oats.

Percentages.—Percentages, except in the case of moisture, shall be percentages ascertained by weight.

Percentage of moisture.—Percentage of moisture in oats shall be ascertained by the moisture tester and the method of use thereof described in Circular No. 72, and supplement thereto, issued by the United States Department of Agriculture, Bureau of Plant Industry, except that the graduated measuring cylinder used shall be that described in Department of Agriculture Bulletin No. 56; or such percentage shall be ascertained by any device and method giving equivalent results.

Test weight per bushel.—Test weight per bushel shall be the test weight per Winchester bushel as determined by the testing apparatus and the method of use thereof described in Bulletin No. 472, dated October 30, 1916, issued by the United States Department of Agriculture, or as determined by any device and method giving equivalent results.

NOTE.—Under regulations pursuant to the United States grain standards act, licensed inspectors are required to state under "Remarks" in all certificates issued by them for oats unless issued for an export shipment, the test weight per bushel in terms of whole and half pounds. For this purpose a fraction of a pound when equal to or greater than a half shall be treated as a half, and when less than a half shall be disregarded.

Foreign material.—Foreign material shall be all matter other than grains and pieces of grains of cultivated oats, except other grains and wild oats, and shall include oats clippings.

Other grains.—Other grains shall include wheat, corn, rye, barley, emmer, spelt, einkorn, grain sorghums, rice, cultivated buckwheat, and flaxseed only.

Sound cultivated oats.—Sound cultivated oats shall be all grains and pieces of grains of cultivated oats which are not heat-damaged, sprouted, frosted, badly ground damaged, badly weather damaged, or otherwise distinctly damaged.

Heat-damaged grains. — Heat-damaged grains shall be grains and pieces of grains of cultivated oats, other grains, or wild oats which have been distinctly discolored or damaged by external heat or as a result of heating caused by fermentation.

FEED OATS STANDARDS

For the purpose of official grain standards of the United States for feed oats:

Feed oats.—Feed oats shall be any grain which consists of 30 per cent or more but less than 80 per cent of cultivated oats; may contain not more than 25 per cent of other grains; and may contain not more than 10 per cent of foreign material, which 10 per cent may include not more than 5 per cent of fine seeds. Feed oats shall consist of not less than 65 per cent of oats, which may include wild oats.

Grades.—All feed oats shall be graded and designated as No. 1, No. 2, No. 3, or Sample Grade, feed oats, as the case may be, according to the respective requirements thereof as specified in these standards.

Bleached feed oats.—Bleached feed oats shall be feed oats which in whole or in part have been treated by the use of sulphurous acid or other bleaching chemicals.

Bleached feed oats shall be graded and designated according to the grade requirements of the standards applicable to such feed oats if they were not bleached, and there shall be added to and made a part of the grade designation the word "Bleached."

FEED OATS

Grade requirements for feed oats

Grade No.[1]	General appearance [2]	Minimum test weight per bushel	Cultivated oats not less than—	Heat damaged (oats, wild oats, and other grains)	Foreign material	
					Total	Fine seeds
				Not to exceed—		
		Lbs.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
1	May be slightly stained	32	60	2	3	2
2	May be stained	29	45	4	4	3
3	May be badly stained or weathered	26	30	6	6	4
Sample grade.	Sample grade feed oats shall be feed oats which do not come within the requirements of any of the grades from No. 1 to No. 3, inclusive, or which have any commercially objectionable foreign odor, or are musty, sour, heating, hot, or are otherwise of distinctly low quality.					

[1] The percentage of moisture in grades Nos. 1, 2, and 3 shall not exceed 14.5.

[2] The feed oats in grades Nos. 1, 2, and 3, shall be cool, sweet, and commercially sound.

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Weevily feed oats.—Weevily feed oats shall be all feed oats which are infested with live weevils or other insects injurious to stored grain.

Weevily feed oats shall be graded and designated according to the grade requirements of the standards applicable to such feed oats if they were not weevily, and there shall be added to and made a part of the grade designation the word "Weevily."

Basis of determinations.—All determinations shall be upon the basis of the lot of grain as a whole, including foreign material, other grains, and wild oats.

Percentages.—Percentages, except in the case of moisture, shall be percentages ascertained by weight.

Percentage of moisture.—Percentage of moisture in feed oats shall be ascertained by the moisture tester and the method of use thereof described in Circular No. 72, and supplement thereto, issued by the United States Department of Agriculture, Bureau of Plant Industry, except that the graduated measuring cylinder used shall be that described in Department of Agriculture Bulletin No. 56; or such percentage shall be ascertained by any device and method giving equivalent results.

Test weight per bushel.—Test weight per bushel shall be the weight per Winchester bushel as determined by the testing apparatus and the method of use thereof described in Bulletin No. 472, dated October 30, 1916, issued by the United States Department of Agriculture, or as determined by any device and method giving equivalent results.

NOTE.—Under regulations pursuant to the United States grain standards act, licensed inspectors are required to state under "Remarks," in all certificates issued by them for feed oats, unless issued for an export shipment, the test weight per bushel in terms of whole and half pounds. For this purpose a fraction of a pound when equal to or greater than a half shall be treated as a half, and when less than a half shall be disregarded.

Foreign material.—Foreign material shall be all matter other than grains and pieces of grains of cultivated oats, except other grains and wild oats, and shall include oat clippings.

Other grains.—Other grains shall include wheat, corn, rye, barley, emmer, spelt, einkorn, grain sorghums, and cultivated buckwheat.

Heat-damaged grains.—Heat-damaged grains shall be grains and pieces of grains of cultivated oats, wild oats, or other grains, which have been distinctly discolored or damaged by external heat or as a result of heating caused by fermentation.

MIXED FEED OATS STANDARDS

For the purpose of official grain standards of the United States for mixed feed oats:

Mixed feed oats.—Mixed feed oats shall be any grain which consists of less than 30 per cent of cultivated oats but not less than 65 per cent of cultivated and wild oats combined; may contain not more than 25 per cent of other grains; and may contain not more than 10 per cent of foreign material which 10 per cent may include not more than 5 per cent of fine seeds.

Grades.—All mixed feed oats shall be graded and designated as No. 1, No. 2, No. 3, or Sample Grade, mixed feed oats, as the case may be, according to the respective requirements thereof as specified in these standards.

Bleached mixed feed oats.—Bleached mixed feed oats shall be mixed feed oats which in whole or in part have been treated by the use of sulphurous acid or other bleaching chemicals.

Bleached mixed feed oats shall be graded and designated according to the grade requirements of the standards applicable to such mixed feed oats if they were not bleached, and there shall be added to, and made a part of, the grade designation the word "Bleached."

MIXED FEED OATS

Grade requirements for mixed feed oats

Grade No.[1]	General appearance[2]	Minimum test weight per bushel	Heat damaged (oats, wild oats, and other grains)	Foreign material	
				Total	Fine seeds
		Not to exceed—			
		Lbs.	*P. ct.*	*P. ct.*	*P. ct.*
1	May be slightly stained	32	2	5	2
2	May be stained	29	4	7	3
3	May be badly stained or weathered.	26	6	10	4
Sample grade.	Sample grade mixed feed oats shall be mixed feed oats which do not come within the requirements of any of the grades from No. 1 to No. 3, inclusive, or which have any commercially objectionable foreign odor or are musty, sour, heating, hot, or are otherwise distinctly low quality.				

[1] The percentage of moisture in grades Nos. 1, 2, and 3 shall not exceed 14.5.

[2] The mixed feed oats in grades Nos. 1, 2, and 3 shall be cool, sweet, and commercially sound.

Weevily mixed feed oats.—Weevily mixed feed oats shall be all mixed feed oats which are infested with live weevils or other insects injurious to stored grain.

Weevily mixed feed oats shall be graded and designated according to the grade requirements of the standards applicable to such mixed feed oats if they were not weevily, and there shall be added to, and made a part of, the grade designation the word "Weevily."

Basis of determinations.—All determinations shall be upon the basis of the lot of grain as a whole, including foreign material, other grains, and wild oats.

Percentages.—Percentages, except in the case of moisture, shall be percentages ascertained by weight.

Percentage of moisture.—Percentage of moisture in mixed feed oats shall be ascertained by the moisture tester and the method of use thereof described in Circular No. 72, and supplement thereto, issued by the United States Department of Agriculture, Bureau of Plant Industry, except that the graduated measuring cylinder used shall be that described in Department of Agriculture Bulletin No. 56; or such percentage shall be ascertained by any device and method giving equivalent results.

Test weight per bushel.—Test weight per bushel shall be the test weight per Winchester bushel as determined by the testing apparatus and the method of use thereof described in Bulletin No. 472, dated October 30, 1916, issued by the United States Department of Agriculture, or as determined by any device and method giving equivalent results.

NOTE.—Under regulations pursuant to the United States grain standards act, licensed inspectors are required to state under "Remarks" in all certificates issued by them for mixed feed oats, unless issued for an export shipment, the test weight per bushel in terms of whole and half pounds. For this purpose a fraction of a pound when equal to or greater than a half shall be treated as a half, and when less than a half shall be disregarded.

Foreign material.—Foreign material shall be all matter other than grains and pieces of grains of cultivated oats, except other grains and wild oats, and shall include oat clippings.

Other grains.—Other grains shall include wheat, corn, rye, barley, emmer, spelt, einkorn, grain sorghums, and cultivated buckwheat.

Heat-damaged grains.—Heat-damaged grains shall be grains and pieces of grains of cultivated oats, wild oats, or other grains, which have been distinctly discolored or damaged by external heat or as a result of heating caused by fermentation.

GRAIN SORGHUMS STANDARDS

For the purpose of official grain standards of the United States for grain sorghums:

Grain sorghums.—Grain sorghums shall be any grain which consists of kafir, milo, durra, feterita, darso, freed sorgo, kaoliang, schrock kafir, and shallu, and any hybrids between these classes, and not more than 35 per cent of nongrain sorghums, other cereal grains, and "foreign material and cracked kernels," as defined in these standards, either singly or in any combination.

Grades.—The subclasses white kafir, kafir, yellow milo, milo, white durra, and durra, and the classes feterita, darso, freed sorgo, brown kaoliang, schrock kafir, shallu and mixed grain sorghums shall be divided into five grades for each subclass or class, as the case may be, according to the respective requirements thereof as specified in these standards, except that in the case of mixed grain sorghums the requirements as to the maximum percentages of other classes or other colors shall be disregarded.

GRAIN SORGHUMS—Grade Requirements

Grade No.	Condition and general appearance	Minimum test weight per bushel	Maximum limits of—						
			Moisture content	Damaged kernels		Other grains		Foreign material and cracked kernels	
				Total	Heat damaged (grain sorghums or other grains)	Total	Nongrain sorghums	Total	Sand, dirt, and finely broken kernels
		Pounds	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
[1] 1	Shall be cool and of natural odor, and good color	55	14	2	0.2	3	1	3	0.5
2	Shall be cool and of natural odor, and may be slightly discolored	53	15	5	5	5	3	6	1.0
3	Shall be cool and of natural odor, and may be discolored	51	16	10	1.0	7	5	10	2.0
4	Shall be cool and may be musty, sour, or badly discolored	49	18	15	3.0	10	10	15	3.0

SAMPLE GRADE: Shall be white kafir, kafir, yellow milo, milo, white durra, durra, feterita, darso, freed sorgo, brown kaoliang, schrock kafir, or shallu, respectively, which does not come within the requirements of any of the grades from No. 1 to No. 4, inclusive, or which has any commercially objectionable foreign odor, or is heating, hot, or otherwise of distinctly low quality.

[1] Grade No. 1 for white kafir and white durra shall consist of 95 per cent or more of white kernels, including other classes and nongrain sorghums. Grade No. 1 for yellow milo shall consist of 95 per cent or more of yellow kernels, including other classes and nongrain sorghums.

CLASSES AND SUBCLASSES OF GRAIN SORGHUMS

Grain sorghums shall be divided into classes and subclasses as follows:

Class I. Kafir.—This class shall include all varieties of kafir and hegari, except schrock kafir, and may include not more than 10 per cent of other grain sorghums. This class shall be divided into two subclasses, as follows:

White kafir.—This subclass shall include all kafir and hegari, except schrock kafir, consisting of 90 per cent or more of white kernels, including other classes and nongrain sorghums. Red spots or other natural coloring upon kernels otherwise white shall not affect their classification as white kafir.

Kafir.—This subclass shall include all kafir and hegari, except schrock kafir, not coming within the classification for white kafir.

Class II. Milo.—This class shall include all varieties of milo, and may include not more than 10 per cent of other grain sorghums. This class shall be divided into two subclasses, as follows:

Yellow milo.—This subclass shall include all milo consisting of 90 per cent or more of yellow kernels, including other classes and nongrain sorghums.

Milo.—This subclass shall include all milo not coming within the classification for yellow milo.

Class III. Durra.—This class shall include all varieties of durra, and may include not more than 10 per cent of other grain sorghums. This class shall be divided into two subclasses, as follows:

White durra.—This subclass shall include all durra consisting of 90 per cent or more of white kernels, including other classes and nongrain sorghums. Red spots or natural coloring upon kernels otherwise white shall not affect their classification as white durra.

Durra.—This subclass shall include all durra not coming within the classification for white durra.

Class IV. Feterita.—This class shall include all varieties of white feterita, and may include not more than 10 per cent of other grain sorghums. Red spots or natural coloring upon kernels otherwise white shall not affect their classification as white feterita.

Class V. Darso.—This class shall include all varieties of darso and may include not more than 10 per cent of other grain sorghums.

Class VI. Freed Sorgo.—This class shall include all varieties of freed sorgo and may include not more than 10 per cent of other grain sorghums.

Class VII. Brown Kaoliang.—This class shall include all varieties of brown kaoliang and may include not more than 10 per cent of other grain sorghums.

Class VIII. Schrock Kafir.—This class shall include all varieties of schrock kafir and may include not more than 10 per cent of other grain sorghums.

Class IX. Shallu.—This class shall include all varieties of shallu and may include not more than 10 per cent of other grain sorghums.

NOTE.—Any grain sorghum or grain-sorghum hybrid not mentioned in classes I to IX, inclusive, shall be included in the class which it most nearly resembles.

Mixed grain sorghums.—Mixed grain sorghums shall be any mixture of grain sorghums not provided for in the classes I to IX, inclusive.

Mixed grain sorghums shall be graded according to each of the grade requirements common to the class of the grain sorghums which predominates over each other class in the mixture. The grade designation of "Mixed grain sorghums" shall include, successively, the number of the grade or the words "Sample grade," the word "Mixed," and, in the order of its predominance, the name and approximate percentage of each of at least two classes.

Weevily grain sorghums.—Weevily grain sorghums shall be grain sorghums which are infested with live weevils or other insects injurious to stored grain.

Weevily grain sorghums shall be graded and designated according to the grade requirements of the grade applicable to such grain sorghums if they were not weevily, and there shall be added to and made a part of the grade designation the word "weevily."

Smutty grain sorghums.—Smutty grain sorghums shall be all grain sorghums which have an unmistakable odor of smut or which contain smut masses.

Smutty grain sorghums shall be graded and designated according to the grade requirements of the grade applicable to such grain sorghums if they were not smutty, and there shall be added to and made a part of the grade designation the word "smutty."

DEFINITIONS

Basis of determinations.—Each determination of general appearance, temperature, odor, smut, moisture, test weight per bushel, "foreign material and cracked kernels," "sand, dirt, and finely broken kernels," and insects injurious to stored grain shall be upon the basis of the lot of grain as a whole, and all other determinations shall be on the basis of the grain when free from foreign material and cracked kernels.

Percentages.—Percentages, except in the case of moisture, shall be percentages ascertained by weight.

Percentage of moisture.—Percentage of moisture in grain sorghums shall be that ascertained by the moisture tester and the method of use thereof for kafir, as described in Circular 72, and supplement thereto, issued by the United States Department of Agriculture, Bureau of Plant Industry, or ascertained by any device and method giving equivalent results.

Test weight per bushel.—The test weight per bushel shall be the test weight per Winchester bushel, as determined by the testing

apparatus and the method of use thereof as described in Bulletin 472, dated October 30, 1916, issued by the United States Department of Agriculture, or as determined by any device and method giving equivalent results.

Other grains.—Other grains shall include wheat, nongrain sorghums, corn, oats, barley, rye, emmer, spelt, einkorn, rice, cultivated buckwheat, and flaxseed only.

Nongrain sorghums.—Nongrain sorghums shall include the grain of sorgo (commonly called "cane seed"), broomcorn, Sudan grass, and Johnson grass, and hybrids between any combination of the groups of the nongrain sorghums.

Foreign material and cracked kernels.—Foreign material and cracked kernels shall be grains and pieces of grains of grain sorghums, and all matter other than grain sorghums which will pass through a No. 8 sieve, and all foreign material, except other grains, remaining on such sieve after screening.

Sand, dirt, and finely broken kernels.—Sand, dirt, and finely broken kernels shall be finely broken kernels, sand, and all other material which will pass through a No. 2½ sieve and all inert matter remaining on either the No. 2½ or No. 8 sieve after screening.

(a) **No. 2½ sieve.**—A metal sieve perforated with round holes 2½ sixty-fourths of an inch in diameter.

(b) **No. 8 sieve.**—A metal sieve perforated with triangular perforations 8 sixty-fourths of an inch long on each side of perforation.

Damaged kernels.—Damaged kernels shall be all grains and pieces of grains of grain sorghums which are heat-damaged, sprouted, frosted, badly ground-damaged, moldy, or otherwise distinctly damaged.

Heat-damaged kernels. — Heat-damaged kernels shall be grains and pieces of grains of grain sorghums or other grains which have been distinctly discolored or damaged by external heat or as a result of heating caused by fermentation.

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